IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s):   Steven T. Kirsch

WARNING: Patent must be applied for in the name(s) of all of the actual inventor(s). 37 CFR 1.41(a) and 1.53(b).

For (title):   DOCUMENT RETRIEVAL SYSTEM WITH ACCESS CONTROL

CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this New Application Transmittal and the documents referred to as enclosed therein are being deposited with the United States Postal Service on this date __September 10, 1997__, in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number __EM097355446US__, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Larry Santos

(type or print name of person mailing paper)

Signature of person mailing paper

NOTE: Each paper or fee referred to as enclosed herein has the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 CFR 1.10(b).

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 CFR 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

1. Type of Application

This new application is for a(n)

(check one applicable item below)

☒ Original (nonprovisional)

☐ Design

    ☐ Plant

WARNING: Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.

WARNING: Do not use this transmittal for the filing of a provisional application.

NOTE: If one of the following 3 items apply, then complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED and a NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION.

☐ Divisional.

☐ Continuation.

☐ Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. 119(e), 120, or 121)

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICA-TION(S) CLAIMED.

WARNING: If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. 120, 121 or 365(c), the 20–year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. 120, 121 or 365(c). (35 U.S.C. 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. 119, 365(a) or 365(b).) For a c–i–p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.

WARNING: When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application must be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

☐ The new application being transmitted claims the benefit of prior U.S. application(s) and enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMIT-TAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed That Are Required for Filing Date under 37 CFR 1.53(b) (Regular) or 37 CFR 1.153 (Design) Application

__9__ Pages of specification

__4__ Pages of claims

__1__ Pages of Abstract

__1__ Sheets of drawing

    ☒ formal

    ☐ informal

(complete the following, if applicable)

☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. 1.84(b).

4. Additional papers enclosed

    ☐ Preliminary Amendment

    ☒ Information Disclosure Statement (37 CFR 1.98)

    ☒ Form PTO-1449

    ☐ Citations

    ☐ Declaration of Biological Deposit

    ☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.

    ☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative

    ☐ Special Comments

    ☐ Other

5. Declaration or oath

    ☒ Enclosed

    Executed by

(check all applicable boxes)

    ☒ inventor(s).

    ☐ legal representative of inventor(s).
    37 CFR 1.42 or 1.43.

    ☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.

        ☐ This is the petition required by 37 CFR 1.47 and the statement required by 37 CFR 1.47 is also attached. See item 13 below for fee.

    ☐ Not Enclosed.

☐ Application is made by a person authorized under 37 CFR 1.41(c) on behalf of *all the above named inventor(s)*.

(The declaration or oath, along with the surcharge required by 37 CFR 1.16(e) can be filed subsequently).

NOTE: It is important that all the correct inventor(s) are named for filing under 37 CFR 1.41(c) and 1.53(b).

☐ Showing that the filing is authorized.
(not required unless called into question. 37 CFR 1.41(d))

6. Inventorship Statement

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

☒ The same.

or

☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,

☐ is submitted.

☐ will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. A verified English translation of the non-English language application and the processing fee of $130.00 required by 37 CFR 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 CFR 1.52(d).

NOTE: A non-English oath or declaration in the form provided or approved by the PTO need not be translated. 37 CFR 1.69(b).

☒ English

☐ Non-English

☐ The attached translation is a verified translation. 37 CFR 1.52(d).

8. Assignment

☐ An assignment of the invention to _____

_____

☐ is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCU-MENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

☐ will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters-one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: A newly executed "CERTIFICATE UNDER 37 CFR 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

9. Certified Copy

Certified copy(ies) of application(s)

country	appln. no.	filed
country	appln. no.	filed
country	appln. no.	filed

from which priority is claimed

- ☐ is (are) attached.
- ☐ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 CFR 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. 120 is itself entitled to priority from a prior foreign application, then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 CFR 1.16)

A. ☒ Regular application

CLAIMS AS FILED			
Number filed	Number Extra	Rate	Basic Fee 37 CFR 1.16(a) $770.00
Total Claims (37 CFR 1.16(c))^{19} – 20 =	0	×	$ 22.00
Independent Claims (37 CFR 1.16(b)) 3 – 3 =	0	×	$ 80.00
Multiple dependent claim(s), if any (37 CFR 1.16(d))		+	260.00

- ☐ Amendment cancelling extra claims enclosed.
- ☐ Amendment deleting multiple-dependencies enclosed.
- ☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 CFR 1.16(d).

Filing Fee Calculation $ 770.00

B. ☐ Design application
($310.00—37 CFR 1.16(f))

              Filing Fee Calculation $_____

C. ☐ Plant application
($510.00—37 CFR 1.16(g))

              Filing fee calculation $_____

11. Small Entity Statement(s)

☒ Verified Statement(s) that this is a filing by a small entity under 37 CFR 1.9 and 1.27 is (are) attached.

WARNING: "Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. A nonprovisional application claiming benefit under 35 U.S.C. 119(e), 120, 121 or 365(c) of a prior application may rely on a verified statement filed in the prior application if the nonprovisional application includes a reference to a verified statement in the prior application or includes a copy of the verified statement filed in the prior application if status as a small entity is still proper and desired." 37 C.F.R. § 1.28(a).

(complete the following, if applicable)

☐ Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

    35 U.S.C. ☐ 119(e),
               ☐ 120,
               ☐ 121,
               ☐ 365(c),

and which status as a small entity is still proper and desired.

☐ A copy of the verified statement in the prior application is included.

Filing Fee Calculation (50% of **A, B** or **C** above) $_____385.00_____

NOTE: Any excess of the full fee paid will be refunded if a verified statement and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 CFR 1.28(a).

12. Request for International-Type Search (37 CFR 1.104(d))

(complete, if applicable)

☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

    ☐ Not Enclosed

        ☐ No filing fee is to be paid at this time.
(This and the surcharge required by 37 CFR 1.16(e) can be paid subsequently.)

    ☒ Enclosed

        ☒ Basic filing fee $ <u>385.00</u>

        ☐ Recording assignment
($40.00; 37 CFR 1.21(h))
(See attached "COVER SHEET FOR
ASSIGNMENT ACCOMPANYING NEW
APPLICATION".) $ _____

        ☐ Petition fee for filing by other than all the
inventors or person on behalf of the inventor
where inventor refused to sign or cannot be
reached.
($130.00; 37 CFR 1.47 and 1.17(h)) $ _____

        ☐ For processing an application with a
specification in
a non-English language. ($130.00; 37 CFR
1.52(d) and 1.17(k)) $ _____

        ☐ Processing and retention fee
($130.00; 37 CFR 1.53(d) and 1.21(l)) $ _____

        ☐ Fee for international-type search report
($40.00; 37 CFR 1.21(e)) $ _____

NOTE: 37 CFR 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 CFR 1.53(d) and this, as well as the changes to 37 CFR 1.53 and 1.78, indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(d).

                      Total fees enclosed $<u>385.00</u>

14. Method of Payment of Fees

    ☒ Check in the amount of $<u>385.00</u>

    ☐ Charge Account No. _____ in the amount of $_____.
A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 CFR 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing, the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

☒ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 19-0590 :

☒ 37 CFR 1.16(a), (f) or (g) (filing fees)

☒ 37 CFR 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 CFR 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

☐ 37 CFR 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)

☐ 37 CFR 1.17 (application processing fees)

WARNING: While 37 CFR 1.17(a), (b), (c) and (d) deal with extensions of time under § 1.136(a), this authorization should be made only with the knowledge that: "Submission of the appropriate extension fee under 37 C.F.R. 1.136(a) is to no avail unless a request or petition for extension is filed." (Emphasis added). Notice of November 5, 1985 (1060 O.G. 27).

☐ 37 CFR 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 CFR 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 CFR 1.311(b).

NOTE: 37 CFR 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . issue fee." From the wording of 37 CFR 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

16. Instructions as to Overpayment

☒ Credit Account No. 19-0590

☐ Refund

_____
SIGNATURE OF ATTORNEY

Reg. No.   24,518

Thomas Schneck
(type or print name of attorney)

Tel. No. (408) 297-9733

P.O. Box 2-E
P.O. Address

San Jose, CA 95109-0005

☐ **Incorporation by reference of added pages**

> *(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANS-MITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)*

☐ Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added_____

☐ Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added_____

☐ Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added_____

☒ **Statement Where No Further Pages Added**

> *(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item.)*

☒ This transmittal ends with this page.

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

Attorney Docket Number	INF-009
First Named Inventor	Steven T. Kirsch

COMPLETE IF KNOWN	
Application Number	
Filing Date	
Group Art Unit	
Examiner Name	

[X] Declaration Submitted with Initial Filing   OR   [ ] Declaration Submitted after Initial Filing

---

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled :

DOCUMENT RETRIEVAL SYSTEM WITH ACCESS CONTROL

(Title of the Invention)

the specification of which

[X] is attached hereto

OR

[ ] was filed on (MM/DD/YYYY) _____ as United States Application Number or PCT International

Application Number _____ and was amended on (MM/DD/YYYY) _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119 (a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or §365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	NO
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]

[ ] Additional foreign application numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	
		[ ] Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

Page 1

Please type a plus sign (+) inside this box → +

PTO/SB/01 (8-96)
Approved for use through 9/30/98. OMB 0651-0032
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U S or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith

Name	Registration Number	Name	Registration Number
Thomas Schneck	24,518		
Mark Protsik	31,788		
Kenneth C. Brooks	38,393		
George B. F. Yee	37,478		

☐ Additional registered practitioner(s) named on a supplemental sheet attached hereto.

Direct all correspondence to   Customer No. 003897

Name	Thomas Schneck
Address	P.O. Box 2-E
Address	

City	San Jose	State	CA	ZIP	95109-0005
Country	U.S.A.	Telephone	408/297-9733	Fax	408/297-9748

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name	Steven	Middle Initial	T.	Family Name	Kirsch	Suffix e.g. Jr.	

Inventor's Signature		Date	9/3/97

Residence: City	Los Altos	State	CA	Country	U.S.A.	Citizenship	U.S.A.

Post Office Address	916 Lundy Lane
Post Office Address	

City	Los Altos	State	CA	Zip	94024	Country	U.S.A.

☐ Additional inventors are being named on supplemental sheet(s) attached hereto

VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR	Docket Number (Optional)
	INF-009

Applicant or Patentee: _Steven T. Kirsch_____

Application or Patent No.: _____

Filed or Issued: _____

Title: _DOCUMENT RETRIEVAL SYSTEM WITH ACCESS CONTROL_____

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

[x] the specification filed herewith with title as listed above.

[ ] the application identified above.

[ ] the patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

[ ] No such person, concern, or organization exists.

[x] Each such person, concern, or organization is listed below.

      Infoseek Corporation
      1399 Moffett Park Drive
      Sunnyvale, California 94089-1134

Separate verified statements are required from each named person, concern, or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)
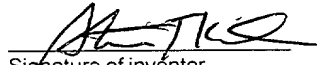
I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Steven T. Kirsch		
NAME OF INVENTOR	NAME OF INVENTOR	NAME OF INVENTOR
ST Kirsch		
Signature of inventor	Signature of inventor	Signature of inventor
9/3/97		
Date	Date	Date

VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(c))--SMALL BUSINESS CONCERN	Docket Number (Optional) INF-009

Applicant or Patentee: _Steven T. Kirsch_

Application or Patent No.: _____

Filed or Issued: _____

Title: _DOCUMENT RETRIEVAL SYSTEM WITH ACCESS CONTROL_

I hereby declare that I am
- ☐ the owner of the small business concern identified below:
- ☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN _Infoseek Corporation_

ADDRESS OF SMALL BUSINESS CONCERN _1399 Moffett Park Drive_
Sunnyvale, California 94089-1134

    I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

    I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

- ☒ the specification filed herewith with title as listed above.
- ☐ the application identified above.
- ☐ the patent identified above

    If the rights held by the above identified small business concern are not exclusive, each individual, concern, or organization having rights in the invention must file separate verified statements averring to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1 9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization having any rights in the invention is listed below:
- ☐ no such person, concern, or organization exists.
- ☐ each such person, concern, or organization is listed below.

    Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)
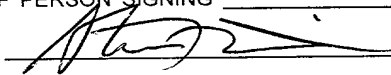
    I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

    I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING _Steven T. Kirsch_

TITLE OF PERSON IF OTHER THAN OWNER _~~President~~ Chairman_

ADDRESS OF PERSON SIGNING _1399 Moffett Park Drive, Sunnyvale, California 94089-1134_

SIGNATURE _[signature]_ DATE _9/3/97_

Description

DOCUMENT RETRIEVAL SYSTEM WITH ACCESS CONTROL

5   TECHNICAL FIELD

The invention relates to electronic document retrieval and in particular to access control for documents available on storage devices located remotely from each other.

10

BACKGROUND ART

In communication networks, document servers, i.e. electronic document storage devices such as large disk drives, are frequently located remotely from each

15   other. In large companies, with plants and offices scattered in many different cities, a computer network is often designed to link all or most locations. The network frequently includes a search engine or query server having an index of every word in every document

20   which is selected for electronic availability, together with indexes for every word of such documents, and with pointers identifying the full document and its server where it may be accessed by an address known as a URL. Users with terminals on the network can address the query

25   server with questions phrased in terms of key words and obtain documents which contain the key words. The questions are usually phrased or interpreted by the query server with query operators. The index at the query server is consulted to determine if the keywords are in

30   the index, how many times they appear, and the number of documents which are responsive to the question, as interpreted by the search engine at the query server. However, a user is not given access to those documents which are beyond his or her access level.

35   In the prior art, the query server contained one list having the access level of each user. The index at the query server contained the access level associated with each corresponding document. Access was provided only to those documents for which the access level of the

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user was appropriate by matching the two lists. The problem here was that the query server had to associate a security level with each document in the index, a cumbersome storage task. In the simplest case, a user is either given permission to search the database, or access is denied, with no middle ground.

Variations of the above approach exist, but in most instances there is a comparison of two lists - the user list, with associated access levels, and the document list, with associated access levels. The document list contains the access level for each appearance of each document in the index. An object of the invention was to devise an access control system which enables secure searching without having to store any access information in the database associated with the search engine.

A further object of the invention is to allow changes in a document server's access control list to be immediately reflected in searches of documents within that document server.

A still further object of the invention is to allow a single centralized index of multiple document servers to be created, whereby searches of this central collection will only return titles of documents that a user has access to, with access control being determined at the remote document servers which contain relevant documents.

SUMMARY OF THE INVENTION

The above object is achieved with a document retrieval system, with access control, in which the documents are stored in a distributed manner over a plurality of servers in a network, termed "web servers", but no access levels are associated with the documents or with the index at a query server. Instead of multiple control lists, a user enters, either manually or automatically, his or her user identification, together with the query to be searched. The search engine at the

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query server receives the question and interprets the query operators to determine the number of hits responsive to the question. Each hit is associated with a document, in electronic form, located at a particular

5   server by means of a pointer, known as a URL. However, before the hits are returned to the user, the hits are "screened" by determining from the web server whether the user has access using an access control list associated with the web server. The list associates user

10   identification with URLs to which the user may have access.

The search engine will not report the presence of the documents for which the access level is insufficient. The web server returns documents for which the

15   access level is compatible. Hence, the net result is that the user appears only to be able to search documents that the user has access to.

An advantage of the present invention is that the security of each document is always consistent

20   between the web server and the search index.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view of the document retrieval and access control system of the present invention.

25   Fig. 2 is a plan view of a first embodiment of an access control system in accord with the present invention.

Fig. 3 is a plan view of a second embodiment of an access control system in accord with the present

30   invention.

Fig. 4 is a plan view of a third embodiment of an access control system in accord with the present invention.

35

BEST MODE FOR CARRYING OUT THE INVENTION

With reference to Fig. 1, a communications
network, such as the Internet or a corporate intranet is
indicated by the data bus line 11, a high speed conduit

5   for digital data. Part of the network includes a query
server 13 which is seen to comprise a search engine 15
which is connected to the text index database 17. The
search engine is a high speed processor connected to the
network by communications link 11. The search engine has

10   the task of going to each document address in the net-
work, known as a URL, combing through each document
associated with the URL and indexing such words in a text
index 17. A "URL" is an address or pointer to a docu-
ment, or a file, or a record in a database, in other

15   words to a piece of information which has been stored at
a site known as a web server 23. The initials URL are an
abbreviation for "uniform resource locator", recognized
by Internet and intranet servers.

The URL is a string of ASCII characters with

20   three common parts, a protocol indicator, a host server
name, and a directory and file name, assuming that a file
is the search target. An example would be
http://federalexec.justice.gov/fbi/agents/cellular/
pagers.html. In the example, the protocol is "http"

25   which is hypertext transfer protocol, a common protocol
which allows linking of files. The host server is
"federalexec.justice.gov/fbi/. The document and its
directory is "fbi/agents/cellular/pagers.html. The
present invention takes advantage of the hierarchical

30   structure of URLs by allowing access to all items of
information specified in the initial portions of the URL
for each user, i.e. a partial URL. The more detail
specified in a URL, the lower the level of access. For
example, the access level associated with

35   http://federalexec.justice.gov/fbi/ might allow access to
all files and data in the fbi server, while the further
specification of "/agents" would further specify a level

of access. In the present invention, a list of users
would have each user associated with URLs, or partial
URLs which that user could access. The http protocol is
particularly useful because it works with "browsers",

5   i.e. software programs which allow the formatting of
documents in a uniform manner which can be read by any
computer or terminal which can run the browser software.
Thus, a terminal or computer need not have access to the
word processing program in which the document was pre-

10   pared. Perhaps the best known feature of http protocol
is the "hyperlink" feature, allowing a user to jump from
a word or symbol in one document to another URL which
expands upon the word or symbol. Another type of proto-
col which is commonly used is "ftp" or "fle transfer

15   protocol". This allows direct access to computer files
on designated servers and is not necessarily oriented to
documents with hyperlinks, like http protocol.

A text index at a query server, lists the words
found in documents accessible to the server. In response

20   to a search request, the query server interprets the
request and produces the number of hits for the search
terms together with the associated URLs for the informa-
tion. Thus, the query server holds information on all
documents of all Internet/intranet sites and can produce

25   corresponding URLs after a search. However, a user may
not have proper access level for all of the documents
found. In accord with the present invention, the user
sees only those documents for which he has proper access.

A typical web site 21 includes a web server 23

30   and a document storage device 25. The web server 23 is a
high speed processor and the storage device 25 is a disk
drive. An access control list server 27 may be stored on
storage device 25 or may have its own auxiliary storage
device, as indicated in Fig. 1. If a separate storage

35   device is used, such as a disk drive, it is also con-
trolled by the web server 23. The web site 21 commu-
nicates with other web sites, not shown, which are also

on the network and joined by one or more communication
links, such as data bus line 11. The storage device 25
holds electronic versions of documents which are avail-
able for searching and retrieval, but without any access
5   control information.

In a corporate environment, the web site 21 may
hold documents from the single plant or factory of a
corporation. Other plants and factories have similar web
sites which are all linked in a network known as an
10 intranet. Access to documents is limited to persons who
have proper authorization. Such authorization is main-
tained in the access control list server 27 associated
with each web site. The list server 27 contains user IDs
and the list of URLs or partial URLs that each user may
15 access. In another example, corporate payroll record
documents might be accessible to all department level
managers and their supervisors, plus all members of the
payroll and accounting departments. All other corporate
employees would not have access to payroll records and so
20 would be excluded from payroll documents available on
storage device 25.

In operation, a user would send a query to
search engine 15 which would interpret the query. An
optional communications link 31 is provided to the access
25 control list server 27 to determine whether the user may
access web site 21 which has certain corporate documents
in the search area under request. Assuming the user has
initial access to the home page of web site 21 the search
progresses by applying search terms to the index on
30 storage device 17 which has pointers to text documents,
such as URLs, found in the storage device 25 within web
site 21. Assuming that payroll information is being
requested and assuming that the payroll information is
stored on storage device 25 which is accessed through the
35 web server 23, the user identification is passed along to
the web server 23. The web server 23 has access to the
access control list server 27. The text index 17 has

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identified documents in storage device 25. The access control list server 27 prevents the web server 23 from delivering any documents where the user identification indicates that the user does not authorization. Only those documents are pulled up for which the user has authorization. Those documents are then reported by the web server 23 to the search engine 15 which, in turn, reports the titles or bibliographic abstracts to the user. It should be noted that the user does not know about records for which access has been denied by the access control list server 27.

It should also be noted that the full text index 17 has no access information. Similarly, the electronic document records in storage device 25 have no security labels or information. All security information is in the access control list server 27 which relates document titles in the text documents storage device 25, their access classification, plus user identification and the access level for each user.

Example A

With reference to Fig. 2, a query server 13 has access to an access control list file which can be located anywhere, but is associated, as by a data link, with one or more web servers 23 that are indexed by the query server. The access control list has a list of all users of the system, together with a list of documents that each user is permitted to access. The access control list file may be local to the query server 13 or may be accessed remotely using a file transfer protocol (FTP). The query server uses its own filesystem file locator, 27, to access and interpret the access control list and calls up those documents in web servers 23 responsive to a search query for which the user has access. Only those documents are presented to a user.

Example B

With reference to Fig. 3, the query server 13 accesses an access control list as in the prior example, except that HTTP protocol is used instead of using the filesystem or FTP.

A particular user, Mr. Jones, ID 71234, might need access to FBI cellular communication device numbers, including pagers and telephones. A query is sent to the query server which uses HTTP protocol to access each access control list file associated with each web server whose documents are contained in the index. His access control entry would be as follows:

    71234=http://federalexec.justice.gov/fbi/agents/cellular/.

He might have other entries for other classes of documents, but this class of documents will relate to FBI cellular numbers, whether pagers, telephones, or other devices. A higher level of access would be as follows:

    71324=http://federalexec.justice.gov/fbi/

and a lower level of access would be as follows:

    71324=http://federalexec.justice.gov/fbi/agents/cellular/pagers.html.

In the latter case, Mr. Jones would not have access to cellular telephone numbers and the web server query server would not allow access to telephone numbers. In both cases, the access control file finds the user, 71324, but in the latter case, access is denied.

Example C

With reference to Fig. 4, the query server 13 is connected to a web server 23, as before, except that the web server is running a program, for example a search program, which is triggered or controlled from the query server by a communication, which invokes a script, batch

file or executable instruction, generated by the query
server and meaningful to the program on the web server
where the requested document is located. Each web server
whose words are indexed validates its own documents for
5   particular users using a validation message. Such
communications are known as "gateway scripts". Gateway
scripts are sometimes called CGI scripts, where CGI is an
acronym for Common Gateway Interface. A script may have
a URL in HTTP format which controls or operates the
10   program in the web server to execute a search query. The
script can be resident in the web server and be invoked
only by the URL transmitted by the query server. The
search server transmits the user identification and list
of candidate URLs that match the query and requests a CGI
15   script to validate the list of URLs. The web server
performs the validation and returns a list back to the
search server indicating the URLs which the user is
entitled to read in accord with his access level. Those
documents which are beyond his access level are not
20   reported to the user.
         It is now possible to have a centralized index
of documents found on multiple document servers, some or
all of which may be remote. An access control list is
associated with the index of documents. A search of the
25   centralized index will report addresses, URLs, of various
documents responsive to the search query. Since the
access control list shows the URLs to which the user has
access, only those titles to corresponding documents need
to be shown to a user or fetched from a document server.
30   An advantage of the present invention is that
changes in the access control list are immediately
reflected in searches, because the list links authorized
documents for each user identification code, sometimes
using a hierarchical structure. In this manner, large
35   categories of documents can be included or excluded from
a search with a single file entry, such as a partial URL.

Claims

1. A document retrieval system with access control for a search engine capable of searching documents distributed over web servers in an electronic network comprising,

one or more web servers having electronic versions of documents available by request,

a search engine having access to access control lists for documents on the web servers, the access control list linking authorized users with all documents permitted for each authorized user, whereby documents found in a search are screened with the list to determine the documents for which a user performing a search has access.

2. The system of claim 1 further defined by means for forwarding to the user only those document titles compatible with the authorized access of the user.

3. The system of claim 1 further comprising a communications link between a query server, connected to the search engine, and access control lists associated with the web servers.

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4. A method of document retrieval in a network environment having web servers where documents are stored and query servers where document searches are launched comprising,

       executing a query on a query server having access to a document index of documents available for searching on document servers by a person having a unique identification code without regard to access control limitations, yielding a list of all relevant documents, each document having a unique URL,

       reviewing all URLs after the search is executed using an access control list associated with each document server to check whether each URL is compatible with the access level of the identification code of the person executing the query, and

       delivering only those documents whose URL is compatible with the access level of the person.

5. The method of claim 4 further defined by providing a data link between the query server and access control lists for associated web servers.

6. The method of claim 5 further defined by storing the access control list separately from the index of documents.

7. The method of claim 5 further defined by storing the access control list separately from the documents.

8. The method of claim 4 further defined by implementing access control with partial URLs indicating the hierarchy of documents to which a person with a unique identification code has access.

9. The method of claim 4 further defined by implementing access control with a common gateway interface script.

10. The method of claim 9 wherein said common gateway interface script returns a message to the query server indicating URLs to which a person with a unique identification code has access.

11. The method of claim 5 wherein a single access control list is provided for all document servers.

12. The method of claim 5 wherein an access control list is provided for each document server.

13. A method of document retrieval in a network environment having web servers where documents are stored and query servers where document searches are launched comprising,

a plurality of document servers, each having a plurality of documents, each document identified with a unique URL, each document server having an access control list defining user identification and for each user identification listing URLs for which access is permitted or denied,

executing a query on a query server having access to a document index of documents available for searching on the document servers by a person having one of said identification codes, and

producing only those documents whose URL is compatible with the access level of the identification code of the person.

14.   The method of claim 13 wherein the URLs are expressed in HTTP protocol.

15.   The method of claim 13 wherein each access control list lists URLs for each user identification number with a hierarchical indication of documents for which access is permitted or denied.

16.   The method of claim 15 wherein said hierarchical indication of documents is by partial URLs.

17.   The method of claim 13 further defined by accessing the access control list by the filesystem of the query server.

18.   The method of claim 13 further defined by accessing the access control list by a file transfer protocol.

19.   The method of claim 13 further defined by confirming access to the access control list by a script message from a document server.

Abstract of the Disclosure

An electonic document retrieval system and
method for a collection of information distributed over a
network having documents stored in web or document
servers in which an access control list relates user
identification to documents to which a user has access.
No access control lists are contained in the documents
themselves nor are comparisons made between lists of
users, with their access levels, and the classifications
of documents. Rather, by the use of URLs or pointers, it
is possible to associate every document to which a user
has access with the user identification number or code.
URLs have a hierchical format which allows partial URLs
to indicate levels of access. HTTP protocol, FTP and CGI
protocol employ URL calls for documents and can use the
access control method and system of the present inven-
tion. When a search query is applied to a query server,
a list of hits is returned, together with pertinent URLs.
The query server consults each access control list
associated with each document server, to present to the
user only those URLs for which he has a proper access
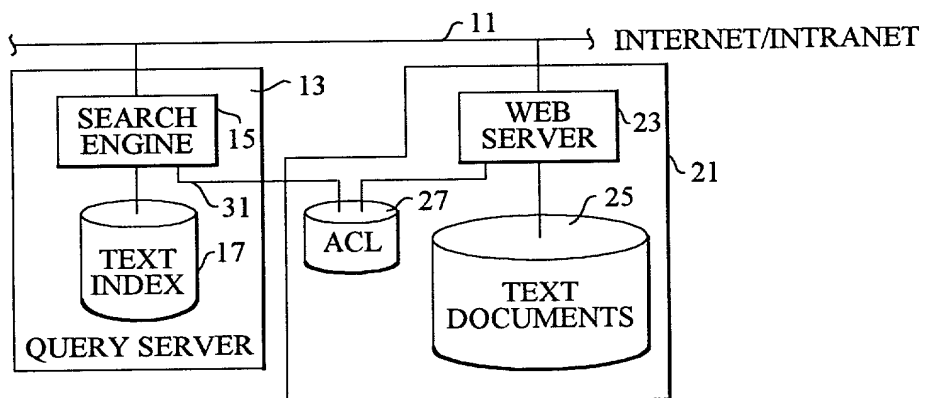level. Other URLs for which the user does not have
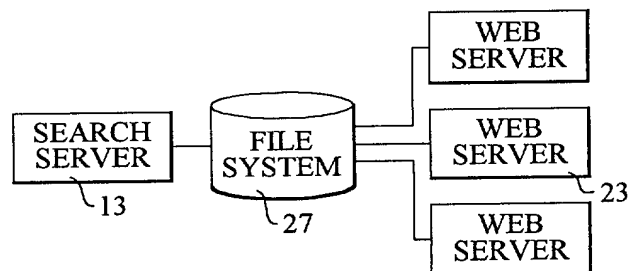proper access are kept hidden from the user.

FIG. 1

FIG. 2

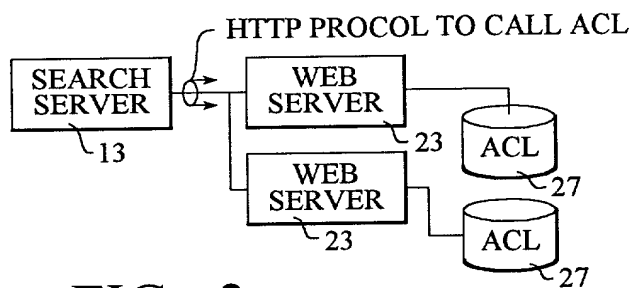FIG. 3
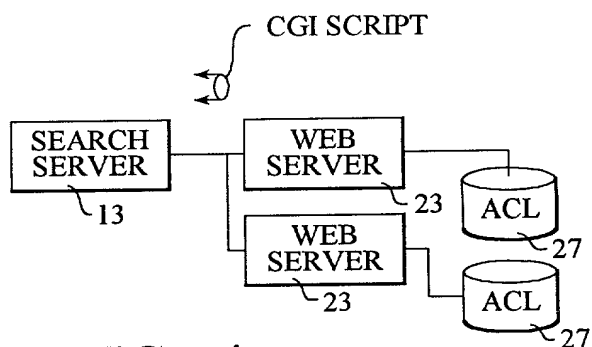

FIG. 4